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OTANI NOBORU
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KANETANI MASATOSHI(54) PRODUCTION OF P-TYPE SINGLE CRYSTAL
SILICON CARBIDE

(57) Abstract:

PROBLEM TO BE SOLVED: To obtain a p-type SiC single crystal with high reproducibility at a low cost by using a mixture of SiC stock with Al_2O_3 .

SOLUTION: When an SiC single crystal is doped with Al in a sublimation-recrystallization method (Rayleigh method) by which SiC stock is sublimed and an SiC single crystal is grown on an SiC seed crystal substrate, the amt. of Al vaporized is reduced even at a high temp. of 2,000-2,500°C by using a mixture of SiC powder with Al_2O_3 as starting material in place of a mixture of SiC powder with Al power and uniform doping with Al is attained during growth. For example, a hexagonal SiC substrate 1 having <0001> direction as the orientation of a growth face is fixed as a seed crystal on the inside of the lid 4 of a graphite crucible 3, SiC powder mixed with 1wt% Al_2O_3 is filled as starting material 2 into the crucible 3 and this crucible 3 is put in a double quartz tube 5. After evacuation, the tube 5 is heated to 2,000°C, Ar is introduced and growth is carried out at 2,400°C under 10Torr for 20hr.

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